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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/710,998
Filing Date: August 16, 2004
Appellant(s): SAWANT ET AL.

Ellen Baker Lewis
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 3/12/2010 appealing from the Office action mailed 10/22/2009.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6567887	SUZUKI	8-2003
6604170	HARMER	5-2003

(9) Grounds of Rejection

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 29-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over <u>Harmer</u> (Patent Number 6,567,887) in view of <u>Suzuki</u> (Patent Number 6,604,170).

As per claim 29, <u>Harmer</u> teaches

A method for accessing a file in a file system in a protected area comprised in secondary storage of a digital processing system comprising a secure random access memory (RAM), the method comprising: (see abstract and background)

opening the file using a file open operation comprised in a file metadata processing module loaded in a shared execution portion of the secure RAM, wherein and stores a cluster identifier for each cluster in the sequence in a buffer comprised in a

shared data portion of the secure RAM; (clusters of files stored in FAT table which is cached in RAM, column 6, lines 18-22 and 25-35)

accessing the file using a file access operation comprised in a file data processing module loaded in the shared execution portion, wherein the data processing module overlays at least a portion of the metadata processing module, (caching mechanism for FAT table, column 6, lines 6-11, where a cache inherently does not have the capacity to hold the entirety of a structure such as a hard drive) and wherein the file access operation accesses a portion of data in the file using at least one cluster identifier stored in the buffer wherein the cluster identifiers are stored in the buffer such that each cluster identifier is locatable by an index computed using a cluster size and a start offset of data in the file. (query caching mechanism to determine information, column 6, lines 14-18)

Harmer does not explicitly indicate "the file open operation traverses a file access table (FAT) of the file system to determine a sequence of clusters allocated to the file".

However, Suzuki discloses “the file open operation traverses a file access table (FAT) of the file system to determine a sequence of clusters allocated to the file” (clusters of files retrieved and stored, column 9, lines 15-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Harmer and Suzuki because using the steps of "the file open operation traverses a file access table (FAT) of the file system to determine a sequence of clusters allocated to the file" would have given those skilled in the art the tools to improve the invention by allowing faster access to files by storing important

structures in faster memory. This gives the user the advantage of more efficient use of time and resources.

As per claim 30, Harmer teaches

the file access operation comprises: computing, based on a start index of the portion of data and the cluster size, an index into the buffer of a location of a cluster identifier of a cluster comprising a start of the data; using the index to retrieve the cluster identifier from the buffer; computing an offset within the cluster of the start of the data; and issuing commands to access the data in the cluster starting at the offset. (column 7, liens 15-25)

As per claim 31, Harmer teaches

the cluster identifiers are stored sequentially in the buffer in cluster allocation order. (column 7, lines 34-37)

As per claim 32, Harmer teaches

the sequence of clusters consists of all clusters allocated to the file. (column 7, lines 32-35)

As per claim 33, Harmer teaches

opening the file and accessing the file are preformed in a secure mode of the digital processing system. (column 7, lines 49-53)

As per claim 34, Harmer teaches

each file in the file system has a same number of clusters and the buffer is of a size to store a cluster identifier for all clusters in a file. (column 7, lines 30-34)

As per claim 35, Harmer teaches

the buffer is overwritten each time a file in the file system is opened. (column 7, lines 28-30)

As per claim 36, Harmer teaches

the secondary storage is a secure digital card. (column 8, lines 28-32)

As per claims 37-44 and 45-52,

These claims are rejected on grounds corresponding to the arguments given above for rejected claims 39-46, respectively, and are similarly rejected.

(10) Response to Argument

With respect to the outstanding 35 USC 103 rejection of claim 29, and all claims which depend therefrom, Appellant argues that Harmer does not teach "opening the file using a file open operation comprised in a file metadata processing module loaded in a shared execution portion of the secure RAM, wherein and stores a cluster identifier for

each cluster in the sequence in a buffer comprised in a shared data portion of the secure RAM". Appellant further argues that the cited reference reads the entire directory structure and FAT into RAM, and there is no need to further access the disk, pointing to column 6, lines 12-14. The citation from Harmer is reproduced as follows:

> With the present invention, it is no longer necessary to go to the drive to determine the location of the data to be written or read from the disk. It is only necessary for the loadable device driver 66 to access or query the caching mechanism 210 in order to determine this information. Correspondingly, in operation, the system receives a request to read or write data from the disk. The file directory is found that corresponds to the request by reading it from the caching mechanism 210 which maintains that data in host RAM. Next, the cluster is found that corresponds to the file directory, and normally a request is sent to the drive to request data from the FAT table, and that information is read from the disk. (Harmer, column 6, lines 12-24)

Respectfully, the Appellant has taken a few lines from the above citation. A full and complete reading reveals that instead of the operating system going directly to the disk, a loadable device driver services operating system requests via a caching mechanism. This operation is show in the following citation from the cited reference:

> The loadable device driver 66 uses its internal caching mechanism 210 to find and supply the relevant file system data that is being requested by the operating system. The directory and cluster information is provided to the operating system essentially at the speed of memory. This eliminates potentially many reads from the disk in order just to start reading actual file data from the disk. The loadable device driver 66 is provided the file system data from its caching mechanism 210 by accessing file system, such as directory information 206, cluster information 204, directly from the memory in system RAM 50. (Harmer, column 5, lines 12-22)

This citation provides further detail regarding the mechanism for operating system requests for disk related information. A cache is commonly known to those in the art as a transparent component storing data so that future requests can be served

faster, assuming the requested data is present in the cache. Those of skill in the art will readily recognized the common terms “cache hit” and “cache miss” as indicating whether the cache is found to contain an requested item or not, where misses necessitate loading of the data item from its slower source. This is implicit to those of skill in the art, however Harmer provides further evidence of the operation of its cache:

> In this case, we are going to describe the use of the read cache RAM to cache the file system data. In this example, the read cache buffer space includes an area for storing file system data. This includes a master boot record 1002. The read cache buffer space includes boot records 1004. The read cache buffer space also includes file system pointer (FST) 1006 to point to the clusters 320. Additionally, the read cache buffer space includes directory table pointer 1008 to point to the directory table 300. The directory tables 1010 are those found in directories 300. (column 7, lines 40-48)

Here Harmer refers to the "cache buffer space", and the use of the term “buffer” gives further evidence that the cache is a temporary storage space and not meant to fulfill all of the requests out of the area reserved. As implicit in any cache, any misses will have to be handled appropriately, and in the cited reference the loadable device driver processes the cache functionality. Therefore the limitation is taught by Harmer.

Appellant also argues that Harmer does not teach “the cluster identifiers are stored in the buffer such that each cluster identifier is locatable by an index computed using a cluster size and a start offset of data in the file”, it is respectfully submitted that the Harmer reference is drawn to a loadable device driver which processes operating system requests for disk accesses, As show in the above citations. FAT’s have existed for decades and they are tables which contain offsets into the disk using the cluster and

sector information. Cluster and sector size are necessary multipliers for determining the offsets for data in a file, and so it is respectfully submitted that the Appellant is simply claiming limitations that have been common knowledge in the art for decades. The fact that they are serviced from the buffer or cache is the basis of Harmer's teaching, as answered above. If further evidence is needed, Harmer teaches:

> A cluster is a logical group of physical sectors on the drive. There is a single entry in the FAT table for every cluster. Space is allocated one cluster at a time. Additionally, typically a second copy of the FAT file is kept but not used. (Harmer, column 5, lines 61-65)
>
> The advantage of the present invention is that it speeds up access to the data. FIG. 3 illustrates the relationship between directory 300, cluster 320, and sector 330. Directory 300 includes, among other things, first directory 302 which includes name, date, and a pointer to first cluster 322. (Harmer, column 6, lines 25-30)

Examining the citations above and Figure 3, it is shown that space is allocated by cluster and sector, and since each sector contains more than a single byte of information there has to be an offset based on the size of the sector. These are all very basic principles of computer science, and the only difference in the claimed invention is that there is a cache acting to faster service request for this data. Again, this cache is the basis of the Harmer reference, as show previously. It is therefore respectfully submitted that the limitation is obvious over Harmer.

Appellant also argues that Harmer does not teach "accessing the file using a file access operation comprised in a file data processing module loaded in the shared execution portion, wherein the data processing module overlays at least a portion of the

metadata processing module", and again argues that Harmer does not allow portions of the FAT table to be stored in RAM. It is respectfully submitted that the Harmer reference teaches a cache as shown previously, and a cache necessarily must overlay when there is a cache miss since the size of the cache is limited. It is implicit in the function of a cache that there is typically some scheme used to determine the portion of the cache which will be overwritten or overlayed, the scheme using a least-recently-used or similar scheme so that there is a greater chance of cache hits in the future by retaining data that has a greater chance of being accessed. These are functions that are commonly known to those in the art. It is therefore respectfully submitted that the limitation is obvious over Harmer.

Appellant also argues that Suzuki does not teach "the file open operation traverses a file access table (FAT) of the file system to determine a sequence of clusters allocated to the file". It is respectfully submitted that while the Suzuki reference was cited as teaching the limitation, perhaps examining the Harmer reference implicitly teaches this feature also based on the following citations:

> "Buffering of partition tables, file system directory structures and individual file cluster chains in a mass storage device" (Harmer, title of invention)
>
> Clusters are used to allocate space on the disk so that a pointer does not have to be maintained in a File Allocation Table like structure to chain individual sectors of a file together. (Harmer, column 2, lines 18-21)

Again, we see that the limitations being claimed are simply implicit features of a FAT, where a file is a basically just a "chain" or linked list, as shown in Harmer. However, the Suzuki reference was added to better teach this limitation:

> In step S901, data of the corresponding cluster is read using the start cluster address of the file, which has already been stored in the variable from the directory entry for the short file name. It is then checked if the read data is the end of data. If the read data is the end of data (YES in step S904), the process ends. On the other hand, if the read data is not the end of data (NO in step S904), the flow advances to step S905 to check if read of file data for the designated size is complete. If read is complete (YES in step S905), the process ends. On the other hand, if read is not complete (NO in step S905), the flow advances to step S906.
> It is checked in step S906 if FAT chain information of the EXT-FAT has come to an end. If FAT chain information has not come to an end (NO in step S906), the flow advances to step S902 to read the cluster address that contains the next data which follows data recorded at the start cluster address, from the EXT-FAT information already stored in the variable. In step S903, data at the read cluster address is read. (Suzuki, column 9, lines 15-38)

The Suzuki reference was added to provide a more detailed account of how clusters associated with a file can be traversed using the FAT structure. In the Suzuki citation, the FAT chain information is stepped through to gather the file information contained in the clusters, as in the argued limitation. Although it could also be argued that Harmer implicitly teaches this limitation because file systems using the FAT have performed in this manner for decades, it is nonetheless submitted that Suzuki clearly teaches this limitation. It is therefore respectfully submitted that the limitation is obvious over Suzuki.

Conclusion:

It is respectfully submitted that a combination of the references cited disclose the claimed file accessing method, medium and system. In light of the forgoing arguments, the examiner respectfully requests the honorable Board of Appeals and Interferences to sustain the rejection.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

Respectfully submitted,

/Jay Morrison/

Jay Morrison, Patent Examiner, AU 2168

June 15, 2010

Conferees:

/Tim T. Vo/
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